
Science Flight Report

Operation IceBridge Arctic 2012



Flight: F20

Mission: Helheim-Kangerdlugssuaq Gap 01

Flight Report Summary

Aircraft	P-3B (N426NA)
Flight Number	21
Flight Request	12P006
Date	Saturday, April 14, 2012 (Z)
Purpose of Flight	Operation IceBridge Mission Helheim-Kangerdlugssuaq Gap 01
Take off time	10:31 Zulu from Kangerlussuaq (BGSF)
Landing time	17:14 Zulu at Kangerlussuaq (BGSF)
Flight Hours	6.8 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	Suspected leak in engine #1 at 15:49 Z. Aborted mission.
Accomplishments	<ul style="list-style-type: none">• Low-altitude survey (1,500) of glaciers and ice sheet profiles.• ATM, snow, Ku-band, accumulation radar, MCoRDS gravimeter, magnetometer, DMS and KT-19 skin temperature sensor were operated on the survey lines.• Ramp pass at 4,000 ft AGL at Kangerlussuaq.
Geographic Keywords	Helheim Glacier, Kangerdlugssuaq Glacier, Hutchinson Glacier
Satellite Tracks	none
Repeat Mission	None

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	60 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.7 TB	None
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	530 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	530 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	138 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	63 GB	None
KT-19 Skin Temp.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8.1 MB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5 GB	None
Magnetometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	290 MB	None

Mission Report (Michael Studinger, Mission Scientist)

This is a new mission, designed primarily to map the bedrock of the ice sheet in the space between Helheim and Kangerdlugssuaq Glaciers. The grid is spaced at approximately 10 km, and it conforms to the 2010 LVIS grid flown here in that several of these lines are designed to repeat the 2010 lines, for dh/dt purposes. These lines also extend across Kangerdlugssuaq fjord in the north end and across the Glacier de France fjord in the south, in order to provide gravity constraints on exposed rock. We also fly the centerline of the Hutchinson glacier for the first time. We transit to and from the area along central Greenland master grid lines.

Thanks to the high pressure ridge along the northeast coast of Greenland, the weather was great as expected. We only lost 5% of ATM data because the range of the lasers was exceeded over steep topography. It was a perfect day until 15:49 Z, when the crew suspected a leak in engine #1 and we returned straight to Kangerlussuaq as precaution. Before that we have collected 5.4 hours of data.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both ATM systems worked well and collected good data along the entire line in cloud free conditions. ATM collected a total of 5.4 hours of science data with 95% coverage. 5% of data was lost because the range of the lasers was exceeded over steep topography.

MCoRDS: The MCoRDS system worked well.

Snow and Ku-band radar: The snow and Ku-band radars worked well on the primary system.

Accumulation radar: Worked well today.

Gravimeter: Worked well.

Magnetometer: Worked well and used the LDEO data logger today without problems.

DMS: DMS worked well and collected 12800 frames on the primary system today.

KT-19 skin temperature sensor: System worked well.

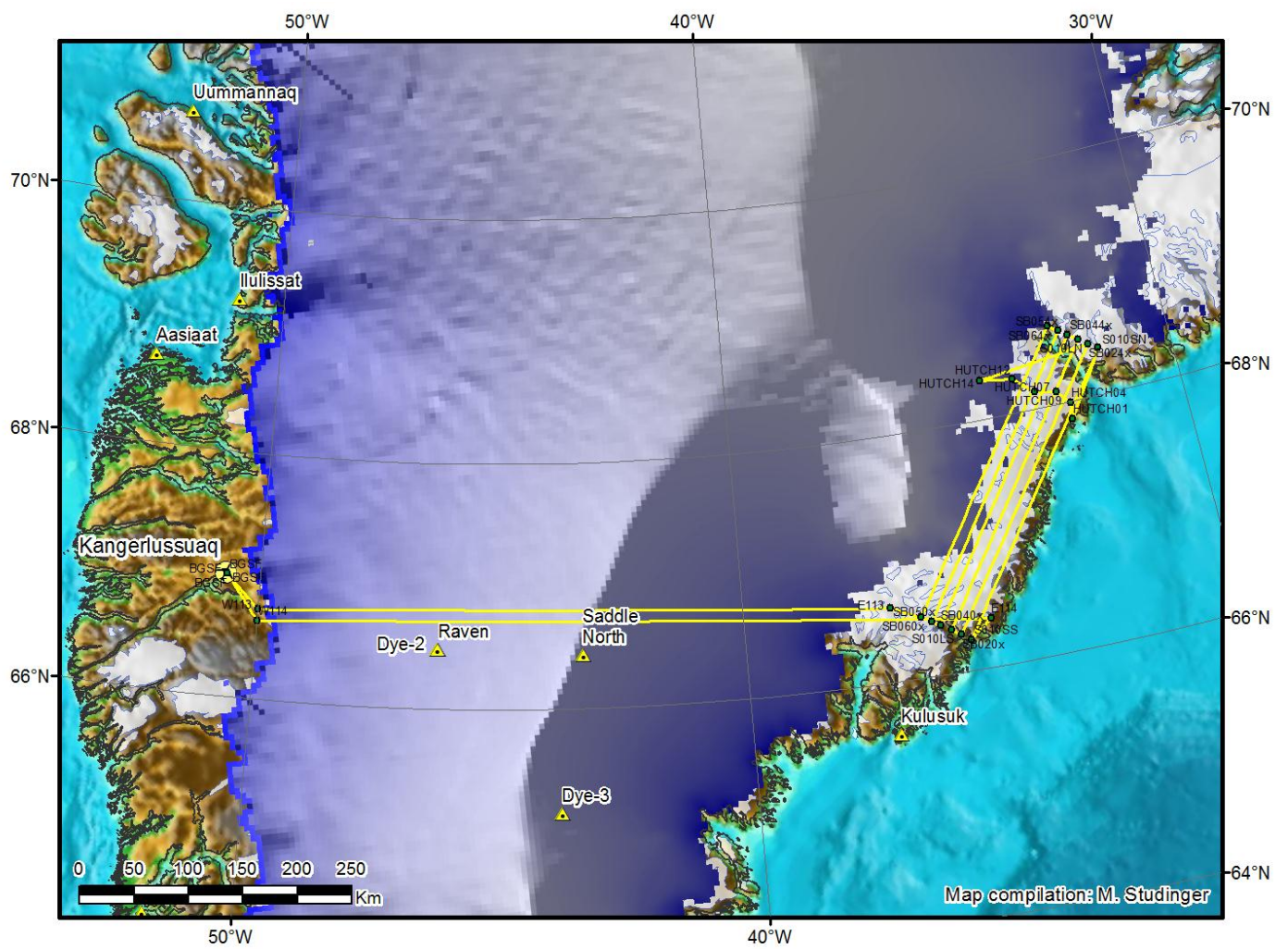


Figure 1: Today's mission plan (yellow).

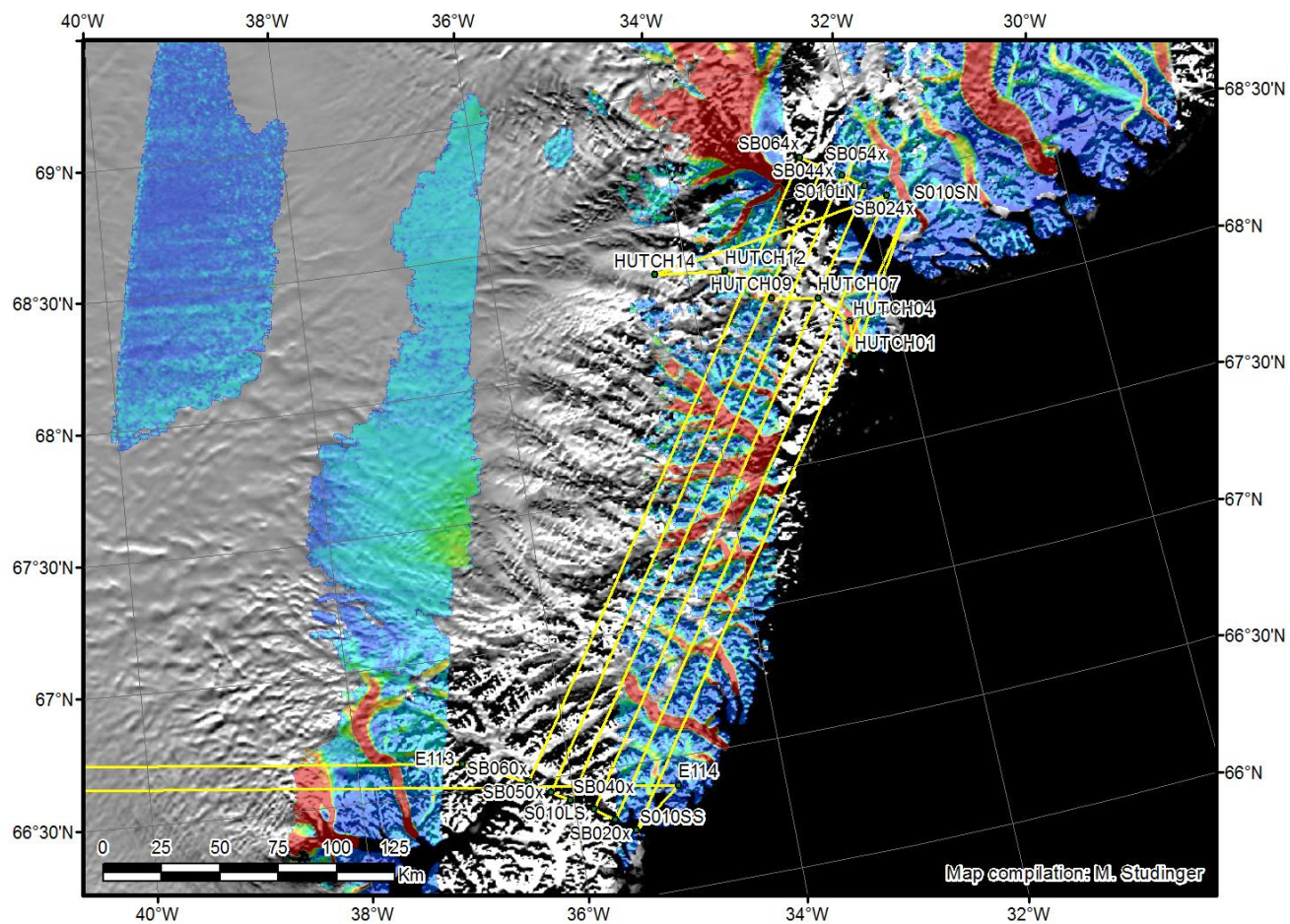


Figure 2: Grid lines along the east coast.



Figure 3: DMS mosaic from today's flight from James Jacobson/DMS.